

2016 UDOT RESEARCH PROBLEM STATEMENT

*** Problem statement deadline is March 14, 2016. Submit statements to Tom Hales at tahales@utah.gov. ***

Title: Evaluation of InSync Adaptive Traffic Control on Fort Union Boulevard

No. (office use): 16.03.12

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UDOT Champion (suggested): TBA

Select One Subject Area

☐ Materials/Pavements

☐ Maintenance

☒ Traffic Mgmt/Safety

☐ Preconstruction

☐ Planning

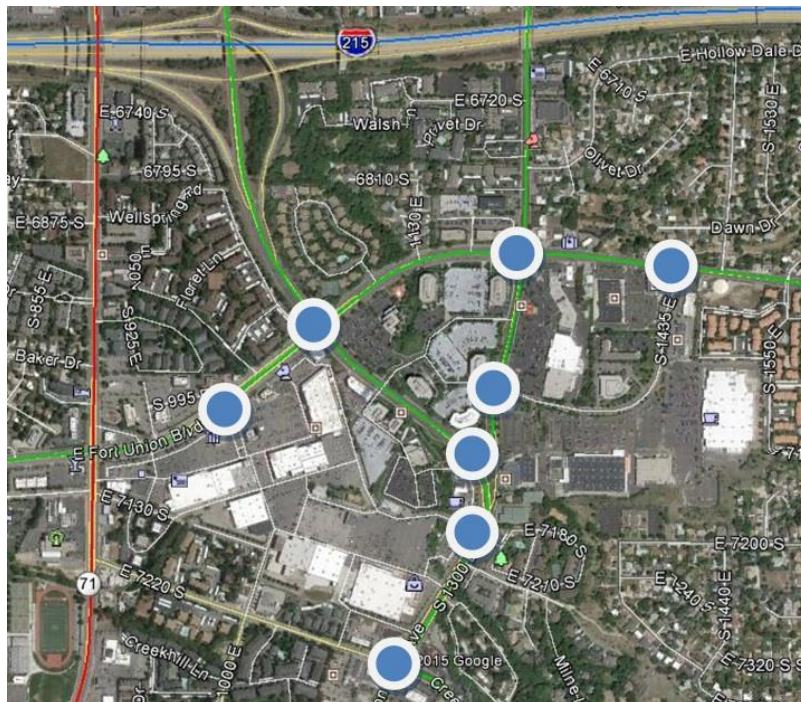
☐ Public Transportation

1. Describe the problem to be addressed.

Fort Union Boulevard is a Minor Urban Arterial in Cottonwood Heights, and is characterized by high traffic volumes throughout the day, as well as significant fluctuations in traffic during different periods. A large shopping mall that spawns for several blocks is located on the south side of this corridor, and I-215 freeway with ramps on Union Park Ave and Highland Drive is on the north side. It also serves as a transition route that leads to the Canyon roads on the east. Delays at signalized intersections can be significant at certain times during day. The shopping mall is a major traffic generator/attractor and adds additional complexity to this corridor, especially during “shopping seasons”. A need for a better management of traffic signals along this corridor has been recognized and a study of an adaptive traffic control system, InSync, is proposed in this research.

2. Explain why this research is important.

This research will estimate the effectiveness of InSync adaptive traffic control system along selected sections of Fort Union Boulevard and 1300 E (Figure 1). It will assess the performance of the systems for different conditions that are expected along these corridors, such as high demand in peak hours, fluctuations in traffic demand due to the shopping mall, and during adverse winter weather conditions. InSync has the ability to adapt to different traffic conditions in real time, and has already been successfully deployed at more than 2,300 intersections in 31 states in the U.S. This research would represent a first evaluation of InSync in Utah. The evaluation will be performed in traffic microsimulation and will complement a potential field deployment of InSync.



3. List the research objective(s):

1. Review current state of art and practice in adaptive signal control, with a focus on InSync deployments
2. Collect traffic data along selected sections of Fort Union Boulevard (intersection counts, travel times, vehicular delays, fluctuations in traffic demand etc.)
3. Develop, calibrate and validate a base microsimulation model in VISSIM
4. Create different scenarios for evaluation of InSync vs. Time-of-Day (TOD) plans (peak demand, off-peak demand, demand fluctuations, adverse winter weather conditions)
5. Evaluate the effectiveness of InSync and TOD plans under different conditions
6. Report findings

4. List the major tasks:

1. Literature review of adaptive signal control and InSync deployments
2. Field data collection and analysis
3. Development of microsimulation models for different scenarios
4. Analysis of InSync effectiveness

5. List the expected results:

1. Analysis of traffic conditions along Fort Union Boulevard
2. Identification of critical sections and intersections
3. Effectiveness of InSync adaptive and TOD actuated signal control

6. Describe how this research will be implemented.

This research will supplement a potential field deployment of InSync along Fort Union Boulevard. It will provide detailed insights into its operation and comparison with actuated TOD plans under different conditions that are occurring along this corridor. This research will also provide ideas for future similar studies on adaptive traffic control in Utah.

The University of Utah will apply for additional funds from the Mountain Plains Consortium (MPC), a University Transportation Center, and if the funds are approved, the researchers will work with the UDOT TAC to develop an additional scope that would supplement the work presented in this proposal.

**7. Requested from UDOT: \$75,000
(or UTA for Public Transportation)**

Other/Matching Funds: \$TBA

Total Cost: \$TBA

8. Outline the proposed schedule, including start and major event dates.

The proposed project duration is eighteen months, as follows:

Start: Summer 2016

Completion by project phases:

Phase 1: Literature review and data collection

Phase 2: Data analysis and model development

Phase 3: Scenario development, comparison and analysis

Phase 4: Finalize analysis, recommendation and provide final report